
ASSESSMENT OF BODY TEMPERATURE BY VARIOUS NON-INVASIVE METHODS IN PATIENTS AT INTENSIVE CARE UNIT

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Abstract

Introduction: Body temperature is an important vital sign that gives insight into a patient's medical condition. In the intensive care unit, temperature measurement is a standardized procedure that is performed several times a day and is one of the basic parameters of patient monitoring.

The aim: Was to examine whether there is a difference in the measured body temperature values depending on the mode of measurement of three non-invasive temperature measurement procedures. The body temperature was measured by an axilla alcohol thermometer on a tympanic membrane and by a sensor thermometer, which was attached to the skin by using an adhesive patch and conducted 24-hour body temperature monitoring. The specific objectives of this study were to examine whether the temperature measured by means of all three measurement methods used was influenced by the following: length of in-hospital stay, patient diet, covering a patient's body with a sheet, temperature measurement time, as well as whether patients were receiving mechanical ventilation, and whether they were surgical or non-surgical patients.

Subjects and methods: The study included 124 adults of both genders, aged 18 and over, who were hospitalized in intensive care units of Požega General Hospital, and covered both surgical and non-surgical patients. Temperature measurement was carried out from 5 March 2019 to 30 April 2019. Respondents were divided into three groups. The first group consisted of 41 respondents whose temperature was measured from 8 am to 4 pm, the second group had 42 respondents whose temperature was measured from 4 pm to 10 pm, and the third group comprised 41 respondents whose temperature was measured from 10 pm to 6 am.

The results: It was observed that the temperature measurement procedure on the tympani membrane was the least reliable ($p = 0.000$). The measurement time (WilksLambda 0.986, $F = 0.658$, $p = 0.684$) and the patient's physical condition (WilksLambda 0.987, $F = 0.522$, $p = 0.688$) had no effect on the measured temperature values. The mean temperature was influenced by hospitalization longer than 2 weeks (Wilks' Lambda = 0.677, $F = 8.560$, $p = 0.000$), feeding on a nasogastric tube (Wilks' Lambda = 0.751, $F = 6.116$, $p = 0.000$), sheet coverage (Wilks' Lambda = 0.730, $F = 14.810$, $p = 0.000$) and the application of mechanical ventilation to all three measurement procedures. Non-surgical patients had higher mean values for all three measurement procedures.

Conclusion: The study has shown that the method of measuring the temperature on the tympanic membrane is less reliable than the methods of measuring the temperature by an axilla alcohol thermometer and by a sensor thermometer on the surface of the skin. Reliability of measuring the temperature on the tympanic membrane can be influenced by correct otoscopic positioning of the sensor on the eardrum, ear bumps, poor visibility when positioning the sensors and other reasons, and due to the aforementioned, temperature readings may be less than the actual ones, which was also shown in this research.

Keywords: patient, intensive care units, body temperature, non-invasive methods